The Mining Journal.

No. 479.] **ENLARGED SHEET.** **[October 26.**

PRACTICAL TUNNELLING.

Just published, with Twelve Copperplate and Forty-six Wood Engravings, price One Guinea, a new work on

PRACTICAL TUNNELLING, explaining in detail, the setting out, the construction, and cost of such works.

By F. W. SIMMS, F.R.A.S., F.G.S., M. Inst. C.E., C.E.

Sold by Messrs. Troughton and Simms, 136, Fleet-street, and Messrs. Simpkin, Marshall, and Co., London. 47

May be had at Weale's Architectural Library, Holborn, and Taylor's [illegible], Wellington street, Strand; and of all booksellers in town and country, price 1s.

INSTRUCTIONS—ASPHALTE OF SEYSSEL.—Just published, with numerous Engravings, full and plain instructions for applying this valuable mineral production.

Miller and Field, publishers, Westminster-bridge road, London.

*** Passengers by the Dover Railway trains are particularly requested to inspect the Asphalte of Seyssel platforms, and other works in Seyssel Asphalte, at the Bricklayers' Arms and Dover Stations of the South Eastern Railway.

FOR EXPORTATION.

TO MERCHANTS, SHIPPERS, AND COLONIAL AGENTS.

The DIRECTORS of the SEYSSEL ASPHALTE COMPANY are prepared to execute ORDERS for the immediate SHIPMENT of this MATERIAL, which, for the convenience of transport, is manufactured in blocks weighing each about 1 cwt.—The blocks are of two kinds, the one (impervious to damp and vermin) for pavement and floors generally, the other for covering of roofs, terraces, vaults, and arches, where it is desirable to keep wet from percolating, or damp from rising, as a cement for brickwork, for lining of tanks, reservoirs, &c.

The material is perfectly free from smell, and unaffected by change of temperature. Unlike gas tar, bitumen, and other spurious compositions, it does not injure the general cargo of the vessel by the unpleasant effluvia arising from those compositions, nor does it become loaded and adhere to the vessel or cargo.

Testimonials of its efficacy, full instructions for use, and samples of the material as it should appear when laid down, sent with each order, to guide the workmen in its application.

I. FARRELL,
Stangate Asphalte Depôt, London. 48

PATENT METALLIC SAND CEMENT, OR ENGLISH POZZOLANO.—TO ENGINEERS, ARCHITECTS, AND BUILDERS.—The proprietors of the PATENT METALLIC SAND, after ten years' experience of its merits, confidently recommend it to the attention of engineers and architects as a valuable material in all works where hydraulic cements are necessary, and great strength is required. From the chemical properties of the Metallic Sand, it forms, when mixed with blue lias lime, a metallic cement of great strength and density; the iron, which is one of its principal constituents, combining with the bed in which it is deposited, and communicating to it a greater degree of hardness than can be obtained by admixture with any other known material. Concrete and mortar, in which the Metallic Sand has been used, are more durable than any other, [illegible]

[illegible]

[illegible] The proprietors refer with confidence to works in which the Metallic Sand has been extensively employed as concrete and mortar—viz., at the new Houses of Parliament, the foundations of which were entirely formed of the Metallic Concrete, the principal tunnels on the Birmingham line of railway, and other important buildings, which are more particularly referred to in the prospectus, where also will be found references to very extensive erections which have been [illegible] with the Metallic Cement; and among the more recent may be named the new Grocers' Club House in King William-street.

Further information will be given, and specimens shown, on application to Mr. C. E. Dyer, 4, New Broad-street, and at the Metallic Cement Wharf, King's-road, opposite Pratt-street, Camden New Town. 49

VESTA or CAMPHINE SPIRIT LAMPS, General Report on, by ANDREW URE, M.D., F.R.S., Professor of Chemistry, &c. October, 1844.—"Having tested a variety of Camphine lamps during the preceding three months, I am convinced the PATENT VESTA LAMP of Mr. YOUNG is not merely the best, but it is the only one hitherto made public which can be used with comfort in closed apartments. It was the first spirit lamp constructed on right principles, keeping in view the peculiar nature of Camphine spirits, and being secured by a correct specification, leaves no room to expect another equally good. In this lamp the burner is completely insulated from the reservoir by a ring of wood or other non-conducting material placed between them, and as no metallic tube passes down from the flame into the volatile spirits they remain cold, whereas when such a tube passes down through the reservoir, for the admission of air to the inside of the flame, without being insulated from the flame (as in all other Argand lamps), the spirits become [illegible] degrees hotter, so as to emit acrid and offensive fumes, the wick also [illegible] the heated tube becomes dry and [illegible] its capillary power, [illegible] at the flame, and then sends up smoke with a shower of lamp black. The Vesta lamp is free from these defects, and when used with properly rectified spirits never smokes nor smells. It can be easily distinguished by the above characters and by the circumstance of the air passing between the wicks to the interior of the flame. It affords undoubtedly the brightest, cleanest, and most economical light hitherto invented, when supplied with pure spirits free from resin. I have lighted my drawing-rooms with the Vesta lamp for several evenings successively, without having its wick trimmed, or its occasioning the slightest [illegible]. I, therefore, deem it due to the patentee's ingenuity, as well as to the public welfare, to give this deliberate opinion at a time when the volatile spirits of turpentine are getting into general use, and when, if they be burned in lamps made on the Argand oil plan, must create danger and annoyance."—Extract from the Supplement to Dr. Ure's Dictionary of Arts, Manufactures, and Mines, under the head of "Turpentine, Spirits of."

W. Young, patentee, 14, Queen-street, Cheapside. Vesta lamps [illegible] rectified free of expense. 50

AUSTRALASIAN, COLONIAL AND GENERAL LIFE ASSURANCE AND ANNUITY COMPANY.

Capital £200,000, in 2000 shares.

DIRECTORS.

Edward Barnard, Esq., F.R.S.	Gideon Colquhoun, Esq.
Henry Buckle, Esq.	C. E. Mangles, Esq.
Robert Brooks, Esq.	Richard Onslow, Esq.
John Henry Capper, Esq.	William Walker, Esq.

51

Bankers—Union Bank of London.

Colonial Bankers—Bank of Australasia (incorporated by Royal Charter, 1835), No. 2, Moorgate-street.

Physician—P. Fraser, Esq., M.D., 62, Guilford-street, Russell-square.

Solicitors—Messrs. Hopkins, Pearse, Stevens, and Co.

Secretary—Edward Ryley, Esq.

The advantages offered to EMIGRANTS to the Australasian colonies by this company are—First, that no extra premium is charged for residence in any of the Australasian colonies, except in New Zealand. Second, that no extra premium is charged to those who assure for the whole term of life, for one voyage out to the Australasian colonies, and for one return voyage; and that premiums may be paid and claims settled in those colonies. And to all persons who wish to assure their lives, the company offers unusually favourable rates of premium, participation in profits, and the guarantee of an ample subscribed capital.

Prospectuses and full particulars may be had at the offices of the company, No. 126, Bishopsgate-street, corner of Cornhill.

Just published, the Seventeenth Edition, price 2s. 6d.; free by post, 3s. 6d.,

THE SILENT FRIEND: a medical work, on Human Frailty, Nervous Debility, Constitutional weakness, excessive indulgence, &c., with Observations on Marriage, &c. By R. and L. PERRY and Co., surgeons, London. Published by the authors, and sold at their residence; also by Strange, 21, Paternoster row; Hannay and Co., 63, Oxford-street; Butler, [illegible], Cheapside; Sanger, 150, Oxford-street; Purkiss, Compton street, Soho, London.

The CORDIAL BALM of SYRIACUM is a stimulant and renovator in all spasmodic complaints. Nervous debility, indigestion, asthma, and consumption, are gradually and imperceptibly removed by its use, and the whole system restored to a healthy state of organization.—Sold in bottles, price 11s. and 33s.

PERRY'S PURIFYING SPECIFIC PILLS have long been used as the most certain remedy for [illegible] complaints of every description, eruptions of the skin, [illegible] on the face, and other disagreeable affections, the result of an impure state of the blood. These pills are perfectly free from mercury, copaiva, and other deleterious drugs, and may be taken with safety without interference with or loss of time from business, and can be relied upon in every instance.—Sold in boxes, 2s. 9d., 4s. 6d., and 11s., by all medicine vendors.

Messrs. Perry and Co. may be consulted at their residence, 19, Berners-street, Oxford-street, daily, from eleven till two and five till eight.—No medicine sent from the [illegible]. 52

LA'MERT ON DEBILITY, NERVOUSNESS, AND ALL DISORDERS ARISING FROM EXCESS, &c.

[illegible]

Just published, the Seventh Edition, in a sealed envelope, price 2s. 6d.; free by post to any address, for 3s. 6d. 53

SELF-PRESERVATION—A Popular Essay on those concealed [illegible] of the generative system, originating in solitary habits, youthful [illegible], or infection, and terminating in local and constitutional weakness, nervous debility, [illegible], impotency, [illegible], syphilis, [illegible], insanity, consumption, &c., with plain directions for their treatment and cure. Illustrated with plates. By SAMUEL LA'MERT, consulting surgeon, 9, Bedford-street, Bedford-square, London; Honorary Member of the London Hospital Medical Society, [illegible] of Apothecaries' Hall, London, &c.

"[illegible]" [illegible]

Sold, wholesale, by S. [illegible], 51 and 52, Paternoster-row; retail by Mann, 39, Cornhill; [illegible]; Hannay and Co., 63, Oxford-street; and Gordon, 146, Leadenhall-street;—or by the author [illegible] daily from [illegible] till [illegible], and from five till eight, and [illegible] at [illegible], &c.—9, Bedford-street, Bedford-square, London.

KILKENNY JUNCTION RAILWAY, CONNECTING THE CITY AND TOWNS OF THE COUNTY OF KILKENNY, AND ADJACENT TOWNS AND DISTRICTS IN THE COUNTIES OF WEXFORD AND WATERFORD, WITH THE CITIES AND HARBOURS OF DUBLIN, LIMERICK, AND CORK.

Capital £200,000, in 8000 shares of £25 each.

Deposit £1 10s. per share.

Length—25½ miles.

No shareholder to be liable beyond the amount of his subscription.

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(With power to add to their number.)

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Messrs. Leahy and Carter, M.I.C.E.I. and M.R.I.A., Acting Engineers.

SOLICITOR.

George Parsons, Esq. Manchester buildings, Parliament street, Westminster.

Secretary and London Agent—Edward Billing, Esq.

Managing Director for London—L. H. Thompson, Esq.

BANKERS.

Bank of Ireland, Provincial Bank of Ireland, National Bank of Ireland, and the Branches of those Banks.

The Union Bank of London, 2, Moorgate-street, Lothbury.

The object of this undertaking is to facilitate the communication between the towns in the county of Kilkenny and the adjacent towns and districts in the counties of Wexford and Waterford with the cities and harbours of Dublin, Limerick, and Cork, by forming a railway from the commercial and manufacturing city of Kilkenny to the Dublin and Cashel Railway, near Abbeyleix.

The towns thus convenienced in their communication with Kilkenny and the cities and harbours of Dublin, Limerick, and Cork, are New Ross, Inistiogue, Thomastown, Knocktopher, Kells, Callan, Ballyragget, Castlecomer, Freshford, Johnstown, Urlingford, Durrow, Ballinakill, Clough, Abbeyleix, Ballyroan, &c., which, with the extensive and very populous districts in their respective vicinities, contain a population of upwards of [illegible].

The agricultural wealth of the county of Kilkenny, and the adjoining country traversed by this railway, [illegible] corn, butter, black cattle, pigs, sheep, wool, &c. and is, perhaps, unequalled by that of any other district of the same extent in Ireland. The formation of this railway will also have the effect of opening up the [illegible] Leinster coal district, which it will connect with the northern, southern, and central parts of Ireland by means of the railway from Dublin to Cashel; and thus, also, the celebrated marble quarries of the county, and the Castlecomer collieries of Kilkenny, well known for their superior qualities, must also secure a ready market in England and Ireland, from which they are already shut out by the existing difficulties of transit. It is a district equally rich in lime and ironstone.

This line is singularly free from any engineering difficulty, the country being [illegible]. There is no tunnel nor viaduct, nor are there excavations or embankments of any magnitude. The intercourse and traffic are carefully estimated, and are based upon the returns of the Railway Commissioners of Ireland. The passenger intercourse between towns is always found to be at least double after the formation of a railway between them.

Upon this supposition, and without reckoning on any but the intercourse to and from Kilkenny, and the adjacent towns and country, the passenger traffic will be [illegible] per day in one direction, or [illegible] per day in both directions, which, at 1½d. per mile per head, gives £[illegible] per day, or per annum for passengers

	£	s.	d.
Upon this supposition … per annum for passengers	14,[illegible]	15	0
The merchandise traffic, consisting of corn, butter, &c., according to the Railway Commissioners' returns, amounts to 28,000 tons, which, at charge of 3d. per ton per mile, gives	8,[illegible]	0	0
[illegible] pigs, at 6d. each, gives	1,[illegible]	0	0
Cattle, horses, sheep, &c.	1,[illegible]	0	0
Mails	1,[illegible]	0	0
Troops, baggage, &c.	750	0	0
Gross receipts	£[illegible]	3	0
Deduct 40 per cent. for working expenses	10,747	13	0
Annual profit	£16,121	10	0

Or 8 per cent. on a capital of £200,000.

Supposing one-third of the capital to be borrowed at 4 per cent. per annum, the above would afford more than 10 per cent. on the paid up capital.

In the above estimate no account is taken of the great increase in the merchandise traffic which must arise from the proximity of the collieries and marble quarries of Kilkenny.

As far as the land proprietors and landholders have been consulted, they have signified their approval of the measure, and declared their readiness to afford it their strongest support.

The liability of the shareholders will be limited by the Act of Parliament to the amount of their respective shares, and power will be taken to allow interest at the rate of 4 per cent. per annum on all deposits and calls, to be computed from the date of each payment.

Prospectuses may be had and applications for shares made to Mr. Billing, the secretary, at the company's temporary offices, 4, Manchester buildings, Parliament-street, Westminster, London; Mr. Maxwell, Kilkenny; Mr. Henry Loesner, stock-broker, 17, College-green, Dublin; Mr. John Wise, stock and sharebroker, Royal Bank buildings, Exchange street, Liverpool; Mr. John M'Donnell, 11, Academy-street, Cork; Messrs. Potter and Co., stock and sharebrokers, Leeds; Messrs. Collinson and Field, stock and sharebrokers, Hull. 54

FORM OF APPLICATION.

To the Provisional Committee of the Kilkenny Junction Railway.

My Lords and Gentlemen—*I hereby request you will apportion me ——— shares in the above proposed railway, and I engage to pay the deposit of £1 10s. per share upon such allotment as you may be pleased to make, and to sign the subscription contract required by Parliament, and also the subscribers' agreement.*

I am, Gentlemen, your obedient servant,

Name ………………
Profession, Trade, or calling ………………
Residence ………………

Date of Application 1844.

CORK AND BANDON RAILWAY, CONNECTING THE DISTRICT AND TOWNS OF THE WEST RIDING OF THE COUNTY WITH THE CITY AND HARBOUR OF CORK.

Capital £200,000, in 8000 shares, of £25 each.—Deposit £1 10s. per share.

Length 20 miles.—Estimated cost £10,000 per mile.

No shareholder to be liable beyond the amount of his subscription.

PROVISIONAL COMMITTEE.

(With power to add to their number.)

Lord Visc. Bernard, M.P. Castle Bernard	Sir [illegible], Bart., D.L., J.P., High Sheriff County of Cork
Hon. Henry B. Bernard, Castle Bernard	Sir Anthony Perrier, Cork
Colonel Chatterton, K.H., D.L.	Thomas R. Sarsfield, Esq. J.P. Doughcloyne
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Robert Walker, Esq., Captain R.N. Rock-castle	Richard Roberts, Esq. J.P. [illegible]
Rev. Somers Payne, Upton	James Roberts, Esq. J.P. [illegible]
Richard Corbett, Esq. M.D. Innishannon	James Carnegie, Esq. Southern
Thos. Hungerford Bateson, Esq. Bandon	Joseph M'Mullen, Esq. Cork
Richard Tonson, Esq. Bandon	[illegible]
[illegible]	[illegible]

STANDING COUNSEL.

John Fleming, Esq. Lincoln's Inn.

ENGINEERS.

Charles Vignoles, Esq. F.R.A.S., M.R.I.A. Consulting Engineer.

P. [illegible] Leahy, Engr. M.R.I.A., Acting Engineer.

SOLICITORS.

J. C. Bennett, Esq. [illegible], Great Brunswick-street, Dublin, and 18, South-mall, Cork.

George Parsons, Esq. Manchester buildings, Parliament street, Westminster.

Secretary and London Agent—Edward Billing, Esq.

Managing Director for London—L. H. Thompson, Esq. 55

BANKERS.

The Provincial Bank of Ireland and its branches.

Union Bank of London, 2, Moorgate-street, Lothbury.

Prospectuses may be had, and applications for shares made to Mr. E. Billing, [illegible]

[illegible]

FORM OF APPLICATION.

To the Provisional Committee of the Cork and Bandon Railway.

[illegible]

I am, Gentlemen, your obedient servant,

Name ………………
Profession, trade, or calling ………………
Residence ………………

All applications for shares must contain a reference to some banker, broker, or other person of respectability.

IRISH GREAT WESTERN RAILWAY, FROM DUBLIN TO GALWAY.

ENGINEER'S REPORT.

The London Secretary begs leave to lay before the public the following communication, just received from Capt. W. S. Moorsom, the engineer of the company:—

4, *Norfolk crescent, Hyde park, Oct. 22, 1844.*

Gentlemen—In compliance with your desire, I have examined the country generally between Dublin, Athlone, and Galway, with a view to the most eligible railway connection between the metropolis and that great western port.

The country, in its general character, is extremely favourable for the formation of a railway—there would be no heavy works—nothing, in fact, that can be called an engineering difficulty on the line. The heaviest work in point of cost would be the bridge over the Shannon, and for this there is good foundation, and a river of very ordinary character to pass.

The principal earthwork on the line would occur a little west of Athlone, and would be of very ordinary description. The gradients will be easy, and of character similar to those on the eastern portions of the Cashel Railway. I am satisfied that the capital you have stated need not be exceeded if a proper management is exercised, and due economy observed, with rigid adherence to such style of railway as the country and general traffic requires, and will be amply supplied by.

The general course I propose is, one leaving the Cashel (and Dublin) Railway, near Naas, and from thence by Edenderry, Philip's Town, Tullamore, Clara, and Kilbeggan, and through Moate to Athlone, and from thence through Ballinasloe and Loughrea and Oranmore to Galway, ending in a most eligible station for merchandise at the docks, and close to the square for passengers, the two positions being contiguous.

Should it be desirable, from any circumstances hereafter, to carry the railway direct to Dublin, such course may be taken to accommodate a considerable population east of Edenderry, by way of Kilcock and Maynooth; but provided that you receive due and proper support from the Cashel Company, so that the public may be fully accommodated through the means of their railway with its excellent terminus in Dublin city, I should not recommend you to take any other course.

The surveys are in rapid progress, and the plans for Parliament will be in readiness, agreeably with your instructions, within the time required by the Standing Orders. I have the honour to be, Gentlemen, your obedient servant,

W. S. MOORSOM.

The Provisional Committee of the Dublin and (G. W. Irish) Galway Railway Company, &c. 56

IRISH GREAT WESTERN RAILWAY, FROM DUBLIN DIRECT TO GALWAY.—Notice is hereby given, that NO FURTHER APPLICATION for SHARES will be received later than the 28th inst., immediately after which the stock will be allotted. JAMES BRYDEN, London Agent. 57

LONDONDERRY AND ENNISKILLEN RAILWAY.

Capital £500,000, in 16,000 shares of £25 each.

Deposit £2 10s. per share.

PROVISIONAL COMMITTEE.

Right Hon. the Earl of Charlemont, Lieut. of the county Tyrone
Right Hon. the Earl of Roden
Right Hon. the Earl of Wicklow, Lieut. of the county Wicklow
Right Hon. the Earl of Erne, Lieut. of the county Fermanagh
The Right Honourable the Lord Mayor of London
Sir Robert A. Ferguson, Bart. M.P., Lieut. of the county Derry
Sir James Stewart, Bart. Fortstewart
Sir Edmund Hayes, Bart. M.P. and D.L.
Sir Robert Bateson, Bart. Castruse, J.P.
Alderman Humphery, M.P. Governor of the Hon. the Irish Society
The Hon. H. A. Cole, M.P. for Enniskillen
Rev. John Grey Porter, Belleisle
Colonel Barton, Waterfoot, Pettigo, D.L.
William S. Collett, Esq. M.P. }
William Edmund Ferrers, Esq. } London Provisional Committee of the
William H. Thomas, Esq. } Dundalk & Enniskillen Railway
John G. Frith, Esq.
Francis Macnaghten, Esq.
George Tyrrell, Esq.
George Whitmore, Esq.
George Hoyte, Esq. Edenmore, Raheny
William Henry, Esq. Mountjoy square, Dublin
Thomas Mooney, Esq. Emerald House, Dublin
Richard Wright, Esq. Pembroke-place, Dublin
Peter Roberts, Esq. Hollybrook park, Dublin
Edward Atkinson, Esq. Carrickbreanan House, Dundalk
John Brodhon, Esq. Dundalk
[illegible] M'Intire, Esq. Clover hill, Dublin
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William Haslett, Esq. Mayor of Derry
William Mosby, Esq. Derry
Patrick Grimes, Esq. Derry
Andrew J. Wall, Esq. Derry
Robert M'Intire, Esq. Derry
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John Munn, Esq. Derry
Robert Bond, Esq. St. Columb's
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John Leathem, Esq. Derry
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Francis Rogan, Esq. M.D. Derry
Stewart Gordon, Esq. Derry

FREDERICK H. HEMMING, Secretary to the London Committee.
PITT SKIPTON, Secretary to the Derry Committee.
SIR JOHN MACNEILL, Engineer, LL.D., F.R.S.

SOLICITORS.

Timothy Tyrrell, Esq. Guildhall, London; [illegible] Law Crawford, Esq. Londonderry.

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Messrs. Roberts, Curtis, and Co.

IRISH BANKERS.

The Bank of Ireland, and its branches.
The Provincial Bank of Ireland, and its branches.
Royal Bank, Dublin
Northern Bank, Belfast }
Belfast Bank } and their branches.
Ulster Bank } 58

It is material to state, that on application to the Honourable the Irish Society, who have so much interest in the land upon which part of the line is intended to be made, they came to the following resolution; and there is every reason to believe that they will eventually give the land without charge:—

It was resolved—

"That in the opinion of this society, the construction of a railway from Londonderry to Enniskillen will be highly beneficial to the public, and also to the estates belonging to the society. This court is therefore disposed to facilitate the formation of such a line of railway; and, upon the production of the plans and sections thereof, to give the subject its most deliberate and favourable consideration."

Applications for shares to be made at the company's office, Moorgate-street chambers, London; and to the provisional committee, Londonderry.

No applications for shares will be received after the 28th inst., and the allotment will take place on the 30th of October inst.

ANDREW SMITH'S PATENT WIRE ROPE, FOR MINING, RAILWAY, and SHIPPING PURPOSES.—The Royal yachts VICTORIA AND ALBERT, PENELOPE, VIRAGO, HERMES, and several other ships in the Royal Navy, as well as the Merchants' Service, have been FITTED WITH ANDREW SMITH'S PATENT WIRE ROPE. It is about half the size and weight of hempen rope and one third cheaper.—For particulars apply to A. Smith, 48, Princes-street, Leicester square; or at the works, Millwall, Poplar, London. 59

COMPOSITION FOR WRITING WITH STEEL PENS.—STEPHENS'S WRITING FLUIDS comprise the most splendid and durable colours, and the most suitable compositions, which art can produce.

THEY CONSIST OF

A BLUE FLUID, changing into an intense black colour.
PATENT UNCHANGEABLE BLUE FLUIDS, remaining a deep blue colour.—Two sorts are prepared, a light and dark blue.
A SUPERIOR BLACK INK, of the common character, but quite fluid.
A SUPERIOR CARMINE RED, for contrast writing.
A LIQUID ROUGE CARMINE, for artists and contrast writing, in glass bottles.
A CARBONACEOUS RECORD INK, which writes instantly black, and being proof against any chemical agent, is most valuable in the prevention of frauds.
A LIQUID, MECHANICAL, and ARCHITECTURAL DRAWING INK, superior to Indian Ink.—Marking ink for linen, ounce stamp [illegible], ink [illegible].

Prepared by HENRY STEPHENS, the inventor, 54, Stamford street, Blackfriars road, London, and sold by stationers and booksellers, in bottles at 3d., 6d., 1s., and 3s. each.

CAUTION.—The Unchangeable Blue Fluids are patent articles; the public are therefore cautioned against [illegible] [illegible]

[illegible] 60

TO ENGINEERS, DRAUGHTSMEN, &c.

STEPHENS'S RULING AND MECHANICAL DRAWING INK, for Engineers, artists and draughtsmen. This article will be found superior to the best Indian ink [illegible]

[illegible]

Sold in [illegible] bottles, [illegible], by the inventor, HENRY STEPHENS, 54, Stamford-street, Blackfriars-road, and by booksellers and stationers, at 6d. each.

SUPPLY OF PURE WATER TO THE METROPOLIS AND ITS SUBURBS—PROPOSED NEW COMPANY.—No. II.

It will be recollected that we entered into the question of this great element of nature and prime necessary of life, not only as regards the necessity of a pure and wholesome supply of water to the metropolis, but in respect also to a great public grievance—the effects resulting from the mutual compact agreed upon by the Southwark, Lambeth, and Vauxhall Companies. The injurious tendencies of monopolies in general have long been apparent, and, as regards water companies, has been acknowledged both in and out of Parliament; and it is our endeavour to show the mischief the public experience from combination, by which competition is to all intents and purposes virtually put an end to, and placed the companies and the public in a relation the reverse of that in which Parliament had designed to them. The benefits which the public would derive from competition are of a very important nature, and to a very considerable extent, so far as competition may be presumed to influence the price of the supply. This combination has left the southern districts subject to the uncontrolled monopoly of the supply of a noxious fluid, inasmuch as the Legislature, in passing the Acts of Parliament which authorised the creation of these companies, made no provision against the evil which has resulted from that combination, and the evils which have been attributed to theoretical speculation, to a monopoly of the supply of any article of consumption, to which we have alluded, in a general enhancement of the price usually paid for the commodity, previously to the establishment of the monopoly. The public have long submitted in silence to this restrictive monopoly, debarring them from participation in the advantages derived from competition, and constraining the inhabitants to accept of whatever sort of supply, either as to quantity or quality, of water that combination may bestow upon them; but as this monopoly are endeavouring to debar the inhabitants from enjoying even the limited rights of pure water, the quality of which was, at the time the rates were increased, so foul as to be unfit for many purposes, and the charge for the same appearing to be quite [illegible]

[illegible]

into the Thames. The quantity of dead animals thrown into the river in and about London, its contamination by the offal of slaughter-houses, and a variety of other causes, which we shall hereafter specify, and which will also be found in the minutes of evidence before the Select Committees of the House of Commons. We have endeavoured to gain information from various sources respecting the state and purity of the Thames water, and its fitness for domestic use, and from such inquiries it appears proved to us that the impurity of the water is extremely bad, foul, and dirty.

ORIGINAL CORRESPONDENCE.

THE HYDRAULIC RAILWAY.

SIR,—"J. B. P.'s" letter, in your last Journal, almost convinces me that he cannot have read Mr. Shuttleworth's pamphlet on hydraulic propulsion; and, if so, he is scarcely entitled to give an opinion upon it. Surely, he does not mean to say, that water would not issue from the foot of a vertical pipe one foot diameter, and with a head of 100 feet, with a very great velocity, so that even at a distance of seventy yards from the vertical pipe, the velocity would not still be very considerable, and this is the utmost distance for which Mr. Shuttleworth contends. Whatever may be the defects of the hydraulic system, I think Mr. Shuttleworth has not failed to provide sufficient both of power and velocity. B.

Rotherham, Oct. 21.

THE HYDRAULIC RAILWAY.

SIR,—Is it not a little singular, that the above invention should have been allowed gradually to struggle its way through the popular apathy to which the present overabundance of inventive talent naturally gives rise, without arousing the ire of "J. B. P.," and that only when the hydraulic railway appears to be on the point of taking its place among the great practical scientific improvements which pre-eminently distinguish the age, your correspondent should vehemently denounce the invention and even the inventor. I imagine, too, it will be considered scarcely less singular, that a man, whose object evidently is annihilation, should hide himself behind his fulminating cloud, and that his thunders, which make a great noise, but really have no lightning in them, should be thrown over the world without the warranty of the thunderer's name. Setting aside the obvious (intended) personality of some of "J. B. P.'s" remarks, the mere dogmatism of their nature requires a name to authorise them—even if any man could. This I am satisfied will be apparent to any of your dispassionate readers, who will be at the trouble of carefully perusing your correspondent's letter. What is it composed of, but in the first place, unhandsome remarks, designed to give rise to inferences as to my inability to organise this invention, instead of proving that the invention itself is unsound; and in the next place, of a string of interrogations. And what is the prevailing feature either of "J. B. P.'s" interrogatories or assumptions, if not downright [illegible] of implication—the argument there is none—that this writer's elementary, and sometimes non-elementary, ideas of science ought to be received by all in acquiescent silence, as unerring dicta. And yet this writer is anonymous! Let the public judge then of the strength of his understanding from this fact.

However, he has published his notions; and that they are no better than mere notions, must now be my [illegible] task to show, for the information of those who have not given attention to these subjects themselves, and who, in the frank honesty of their hearts, might take the mere boldness of this writer for truth. But what can be more irksome than to unravel the confused tissue of a mind whose self-sufficiency, so heavily as it is dark, will dash through the whole structure of a science in half an hour, and tear down its fairest proportions if they bar its progress.

Now to my task. "J. B. P." commences his letter in the usual didactic style of anonymous writers, and with a full share of their declamatory [illegible]

[illegible]

[illegible], if the test is not against them, which point I do here not feel myself called upon to offer an opinion one way or the other—but it seems uncertain whether "J. B. P." on re-considering the terms of his letter, might not feel much inclined to correct it, so as to institute such a comparison, and that, too, on an authority to which the tenor of his whole communication clearly shows he considers the very *facts* of science must bend and conform themselves—namely, his own *ipse dixit*. But as for myself, it would ill become me thus unreasonably to depreciate that invention, after its supporters have adopted the *auxiliary water power*, through the medium of water wheels, &c., which I *think* I was the first to propose in aid of my own invention, wherever a locality should afford falls sufficiently high to work wheels, but not high enough to be employed as my immediate propulsive agent; after also, as I am credibly informed, they are preparing to adapt their system (if possible) to my plan of momentive impulse over portions of the line—a plan, the practical utility and advantage of which, the atmospheric gentlemen are thus about to confirm; that is, unless they should ultimately find their system cannot be accommodated to it—and after their friends in Scotland are now beginning to advocate the atmospheric system for canals; being a purpose for which I have long shown hydraulic propulsion to be well adapted.

I dare say most of your readers will be of opinion that interrogatories put with a proper degree of confidence, are occasionally resorted to by some of those who think it well to hide ignorance, rather than be at the trouble of removing it by sound continued study; however this may be, "J. B. P." delights in this easy mode of writing; and to continue my replies; I beg to inform him that I have yet to learn that any water works company "cannot supply water, at any moderate distance, to even the height of an ordinary building," seeing that they do supply water to the upper stories of the houses, not only at "moderate," but even immoderate distances—namely, several miles from their works; nay, if "J. B. P." wishes to see it thrown right over rows of high houses he has only to go to Bath, and, if he have a little influence with the corporation, he may witness what I state, performed in proper fire-engine fashion, the water being taken from the "mains" in the streets, or rather what would be termed "services" here, and with guide pipe and nozzle, flung in a powerful jet to an extraordinary height, even though the supply dam must be, from some parts of the city, distant from two to two and a half miles. Having discovered they have this power, they intend to apply it in case of fire.

[illegible]

Anderton's Hotel, Oct. 21. J. G. SHUTTLEWORTH.

RAILWAYS BETWEEN ENGLAND AND SCOTLAND.—[illegible] shirting them. One thing is worthy of particular notice, if it were only for the joke's sake—namely, that the town of Dumfries is not only fifty-four miles nearer to Edinburgh, but also five miles nearer to Glasgow by the Caledonian than by what is called "the Glasgow, Kilmarnock, and Dumfries line." This facetious assumption of Dumfries as a capital for the Kilmarnock line, must be viewed as a rather broad imputation of gullibility against the inhabitants of that town; who, on the contrary, bear the repute (especially if we judge from the character of their periodicals) of being as sharp witted a race as can be found on either side of the border. Let not our friends of Berwick and Kilmarnock infer from these remarks that we grudge them long lines of railway, though they were for their own exclusive use. We, no doubt, consider a railway to connect together Carlisle, Dumfries, Edinburgh, and Glasgow, and the north of Scotland, as much more important than a Berwick and Edinburgh, or a Glasgow, Kilmarnock, and Dumfries Railway, but we rejoice to see all such projects go on, being satisfied that the public at least are gainers more or less by all railways whatsoever.—*Edinburgh Observer.*

RAILROADS IN GERMANY.—It appears from an official return that, at the end of August last, there had been completed in Germany 475 French leagues of railroads, and that the capital employed amounted to 130,000,000 florins (about 273,000,000 francs).

IMPORTANT CHEMICAL DISCOVERY.—On the 7th instant, M. Balard read a paper, at the Paris Academy of Sciences, on the means of extracting from sea water the sulphates of soda and potass in sufficient quantity for all the purposes of commerce, without having recourse to the present expensive process; hitherto it has been found impracticable to obtain the sulphate of soda from sea water in abundance, but M. Balard has been able, from an evaporating surface of 100 hectares (250 English acres), to obtain 2,000,000 kilogrammes in one year. We extract the following from M. Balard's paper, showing the causes which have hitherto prevented such results, and his means of remedy:—"When two salts differ in their acid and their bases, and a double decomposition is possible, the presence of the first may favour the solubility of the second. When these two salts have, on the contrary, the same acid and the same basis, and the double decomposition is no longer possible, the same phenomenon does not take place. [illegible]

[illegible]

RAILWAYS IN IRELAND.

Anxious as we have ever been to see the railroad system fully developed in the Sister Isle, it is with much pleasure we observe the progress which the already-projected lines have so far made, and, though we should have been better pleased to have seen double the number prepared for the next session of Parliament, we cannot help congratulating the people of Ireland on the present aspect of their railway affairs. As there is nothing wanting in Ireland but capital to bring into action all the extraordinary powers with which she is endowed—a water-power unsurpassed, perhaps, in the world, to the same extent of land, fuel in abundance, mineral riches unlimited, and a prolific agricultural soil—the present progress of the formation of railway companies holds out a prospect for Ireland for years to come at which every friend of that country must rejoice. We append a few explanatory remarks on several lines, the construction of which will confer incalculable advantages on the districts through which they will pass, and first—

GREAT WESTERN OF IRELAND.—In reference to a line, the prospectus of which was announced under the above title, but which takes an indirect route, and along the banks of the Royal Canal, to proceed to Athlone, by Mullingar, which is but midway between Dublin and Galway, the following letter will show its importance, and the next to certainty of an enormous traffic thereon—conferring the greatest benefits on the population, and a certainty of a fair return for the capital expended. The writer, Sir Samuel O'Malley, is looked upon as a disinterested authority, well acquainted with the statistical details of the localities through which the line will pass, and anxious for the advancement of the welfare of Ireland:—

"SIR,—Some days ago I saw in your valuable paper, which seems not chained to the chariot wheels of any man or party, observations so rational and judicious on the strange project of working a railroad to Athlone, by first running some distance on the Great Southern Railway, crossing north to Mullingar, and then running the double back again to Kilbeggan, that as the person who first suggested a railway to Athlone, in 1830, I shall take leave to offer to you a few observations upon the subject. There is no doubt, Sir, that a properly planned, properly executed, and properly managed railway to Athlone would pay better, perhaps (I believe I might say certainly), than any other railway in Ireland; it would be travelled over by fully one-fourth of the Irish people—by the whole of the people of the province of Connaught, and a great portion of the people of Leinster. But, Sir, ill planned, ill executed, or ill managed undertakings, even of the most profitable nature, signally fail—and of this, if necessary, I could give you recent illustrative examples of very large magnitude. The advantage of railways over canals is caused by the lessened resistance, and by the absence of the obstruction of locks. Curves in railways cause as much resistance as steep ascents, stops and short turns as much obstruction as locks—so that if you were to make a devious railway, [illegible]

[illegible] ... I am, Sir, &c., S. O'MALLEY."

IRISH GREAT WESTERN.—[illegible]

KILKENNY JUNCTION.—[illegible]

[illegible]

... Mr. W. Bridges, of London, and Mr. Valentine, the engineer, attended, who explained, that the committee of a company formed in London had deputed him and Mr. Valentine to ascertain if the undertaking would receive the support of the inhabitants; and if shares would be taken up among the towns interested sufficient to cover the surveying and Parliamentary expenses, adequate capital would be raised in England to complete the work. Mr. Bridges had been appointed secretary, and Mr. Valentine engineer. The latter calculated that the line would cost 300,000l., exclusive of stock; it would be thirty-two miles in length, and he reckoned on carrying 110,000 tons of merchandise and cattle, and on the receipt of at least 5000l. per annum for passengers—and that it would pay at least 10 per cent. After much conversation, in which the Marquis of Ormonde and several influential gentlemen joined, it was resolved that the mayor should be requested to call a meeting to be held on Saturday (this day), to hear a report from Messrs. Bridges and Valentine, and determine what proceedings should be taken in consequence; and this meeting will most probably decide whether the two proposed companies shall or shall not be amalgamated.

THE CORK AND BANDON.—This line, which has not been before the public a month, is so well appreciated by the capitalist, that the share list is now filled, and they are prepared to go before the House of Commons' committee.

WEXFORD, CARLOW, AND DUBLIN JUNCTION.—This company, which has been before the public little more than a fortnight, is progressing satisfactorily; it will be forty miles in length, will connect Dublin with Wexford and Carlow, passing the towns of Tullow, Newtonbarry, and Enniscorthy, and it is intended, in the first instance, to lay down only a single line of rails.

LONDONDERRY AND ENNISKILLEN.—The shares in this line have been so eagerly sought after, that the provisional committee have decided not to receive any further application after the 29th inst. The importance of this line is such, that the Irish Society, through whose lands a considerable portion of the line will pass, have resolved to give the subject their most favourable consideration.

Such is the present position of the principal Irish lines, and, calculated as they are to develope the resources of the country, and confer a lasting benefit on the population, it is gratifying to see at length the spirit of enterprise awakened, and a probability of the flow of a large capital into Ireland, and its circulation at an early period.

PROPOSED NEW RAILWAY TO MANCHESTER.

[FROM A CORRESPONDENT.]

In addition to the numerous lines which are now before the public, a company is in course of formation, though not yet matured, for the construction of a direct line of railway to Manchester, which, at about fifty miles from London, and near Bedford, will diverge and proceed direct to York, passing through or near the towns of Barnet, St. Albans, Luton, Silsoe, Ampthill, Bedford, Sharnbrook, Higham Ferrers, Wellingborough, Kettering, Market Harborough, Leicester, Loughborough, Derby (with a branch through the Potteries to Crewe), Leek, Macclesfield, Stockport, and Manchester. The York line, after passing Bedford, will proceed by Thrapston, Oundle, Stamford, Grantham, Newark, Retford, Doncaster, Snaith, Selby, to York. We are thus particular in giving the direct routes, to enable our readers, on referring to the map, to conclude which of the several proposed lines is most worthy of support. That there are many advantages in the present proposal, we think is apparent; the direct line to Manchester is, we believe, the shortest route of any line existing or proposed—while that to York is about on a par with the others which have been projected. The first fifty miles, being the trunk to two great lines, is a novel, and undoubtedly an advantageous, feature in an economical point of view; and the populous districts through which the whole passes will, undoubtedly, secure a large amount of traffic, and be a great convenience to the public. The preliminary arrangements are, we understand, nearly complete, and we expect shortly to be able to lay before our readers more detailed particulars on the subject.

DISS, BECCLES, AND YARMOUTH RAILWAY.

In another column of this day's *Journal* will be found the prospectus of one of the projected lines of railway through Diss, to connect the metropolis with Norwich, which are now under consideration by competing companies (one of which will, doubtless, be carried out under the sanction of Parliament);—this line is proposed to connect Diss with Yarmouth, and the towns of Beccles, Bungay, Harleston, and Scole, thus shortening the distance between Yarmouth and the metropolis twenty miles, and bringing the whole of the agricultural population and commerce of the district into direct communication with the northern and southern division of Suffolk and Norfolk with the ports of Yarmouth and Lowestoft, the metropolis, and eventually, on the completion of important lines now in contemplation in the north-eastern and midland counties, with the large manufacturing districts, and the north of England.

The importance of having a branch line from the Eastern Counties Union, to terminate at Yarmouth, in preference to any other port on the eastern coast, is clear, when it is considered that city has a population of 24,000 inhabitants—while the next in rank (Lowestoft) contains only 5000, to which a branch may be eventually carried. In addition to the 24,000 inhabitants in Yarmouth, Diss has 3000, Harleston 2000, Bungay 4100, and Beccles 4000, besides the extensive agricultural population surrounding these districts, which, in addition to the traffic which a railway will create with distant counties, fully warrants the estimate made of the return upon the outlay, which is 7 per cent. The formation of the line will be simple and inexpensive; land will be secured sufficient for a double line, which will, doubtless, be required hereafter, though in the first instance a single line only will be laid down. [illegible]

[illegible]

NEWARK AND SHEFFIELD RAILWAY.—[illegible]

[illegible]

THE RAILWAY CONSIDERED WITH REFERENCE TO BRITISH COMMERCE.

Railway communication has hitherto been considered chiefly with regard to passengers, but it is to the full as important to contemplate this extraordinary power in its subordination to commerce, and on the part especially of the British statesman and merchant in its bearing on British commerce. In the introduction of the bonding system, early in the present century, it was the object of a great statesman (Mr. Pitt) to render this country the depôt of the commerce of the world, by affording to the merchant security for goods imported, at a convenient centre for distribution, without burdening him with the payment of duty unnecessarily, if to be re-shipped for foreign or colonial consumption, or prematurely, if required for home consumption. The docks on the river Thames, with their immense warehouses, then originated, and, as constructed in succession, have justified the conception of the minister and the enterprise of the merchant. The railway, with its locomotive-power, presents a new faculty, calculated still further, and very largely, to increase our commerce, by affording new and unexpected means of deposit and facilities of transit. The true configuration of the railways of this kingdom may be described by a line drawn north and south, from Aberdeen to Southampton, with transverse lines, east and west; such a figure would provide nearly all that can be required in the course or direction of railways; and had comprehensive views prevailed immediately upon the success of the Liverpool and Manchester Railway being ascertained, many errors and a vast misdirection of capital would have been prevented. Still there is, actually, some assimilation to this figure—for lines of railway do reach from Newcastle-on-Tyne to Rugby, about 220 miles; in the same southern direction from Oxford to Didcot (on the Great Western Railway), 10 miles; and from Basingstoke to [illegible]

[illegible]

... between Harwich and Newcastle, offering to the exporter the choice of the port of departure on the east coast, with all the resources of its shipping, for goods destined for Belgium, Holland, Germany, and the ports of the Baltic Sea;—the markets in the south of Europe, the British colonies and dependencies, and all the other countries of the world, being also open to him, as well as the home markets of the United Kingdom.

Thus do the cares of the statesman, the interests of the merchant and railway proprietor, and the claims of humanity, accord, as to the great objects of giving impulse and a new direction to a large portion of the vast and increasing commerce of the world, by rendering this country the safe and ready highway between the most remote regions, at the least risk of life and property.

CORNWALL RAILWAY, FROM PLYMOUTH TO FALMOUTH.—By an advertisement inserted in to-day's *Journal*, we find this very important national undertaking has received the support of the public, and that the committee have not only allotted all the shares, but are obliged to refuse a great number of applicants. We are also informed, that there is every reason to expect the Board of Trade will give its approval to this line, as it is known the Government are desirous of extending the coast lines of the kingdom, to be available in case of war. The assistance of the Great Western and other companies in carrying out this undertaking, and the very substantial support rendered by the nobility and gentry of the county, entitle this line to the consideration of the Legislature; and its projectors are deserving our praise for the perseverance which they have exhibited in bringing to a successful issue an enterprise which at one time was thought to be hopeless. With a railway to Falmouth, the packet establishment will, no doubt, soon be restored to that splendid port, and passengers from all parts of the kingdom will find their voyage to other parts of the world relieved from that most disagreeable portion, the passage down the English Channel, which is always uncomfortable, and oftentimes most disastrous.

LONDON AND DOVER RAILWAY COMPANY.—The very general complaints which have for so long a time been made against this company for want of punctuality in the transmission of their trains, and in general not keeping faith in their engagements with the public, will, we now trust, no [illegible]

[illegible]

IMPROVEMENTS IN STEAM PROPULSION.

We have perused with much pleasure a lecture which was delivered at the Boston Lyceum, U.S., by Mr. O. Sargent, on the subjects of the improvements in steam navigation by the screw propeller and other inventions of Capt. Ericsson, with some notice of his caloric engine—the emanation of a prolific brain and highly scientific mind, which, if brought to maturity, will confer the most important benefits on mankind, and place within our grasp a power of which at present no conception can be formed, and at so trifling a working cost that the first outlay for the engine may be considered the only one. The interest excited by the first departure of the *Great Western* steam ship from New York is so well described in the opening of the lecture, with the successful competition on a future occasion of a sailing ship fitted with the *Ericsson* propeller, that we give it in the lecturer's own words:—"Some five or six years ago I was a spectator of the departure of the *Great Western* from the port of New York, on her first trans-Atlantic voyage; the event excited universal interest; quite a gala day was made on the occasion. When the hour of her departure approached, Castle Garden, and the Battery, and the piers in the neighbourhood, on the north and east rivers, were crowded with their thousands of curious and anxious spectators. The numerous ships in the harbour displayed their national flags. Scores of sail boats and row boats were darting about among the large craft, with which the bay and rivers were alive. When this magnificent vessel started on her voyage, she was followed by a fleet of steam-boats laden with dense masses of human beings, while the floating streamers and gay music animated a scene which is, at all times, one of surpassing natural beauty. The *Great Western* continued to come and go, with the regularity of the returning months, and her departure had, of course, ceased to be a subject of much more interest than that of an ordinary London packet. On the 20th of October last, however, between two and three o'clock in the afternoon, the tide of life that was pouring down Broadway towards the Battery, indicated that some spectacle was anticipated of similar interest with that which I have described. The Battery and the piers were again thronged with an expecting multitude. At her appointed hour, the *Great Western* came ploughing her way down the east river, under circumstances which manifested more than ordinary effort. She was enveloped in clouds of steam, and of dense black smoke; her paddle-wheels were revolving with unusual velocity, leaving a white wake behind her, that seemed to cover half the river with foam—and with her sails all set, she was evidently prepared to do her best in an anticipated race. As she passed the Battery she was greeted with three hearty cheers, and a fair field with no favour was all that she seemed to challenge, and the least that all were willing to allow her. She had left Castle Garden about a quarter of a mile behind her, when a fine model of a sailing ship, frigate-like, appeared gliding gracefully down the north river, against the tide, without a breath of smoke or steam to obscure her path—with no paddle-wheels or smoke-pipe visible—propelled by a noiseless and unseen agency, without a rag of canvass on her lithe and beautiful spars—but at a speed that soon convinced the assembled thousands that she would successfully dispute the palm with the gallant vessel, celebrated throughout the world, and everywhere admitted to be the queen of the seas. Such is the march of improvement in the arts. The new comer was the United States war steamer *Princeton*; the agent by which she was moved was Ericsson's propeller. She soon reached and passed the *Great Western*, went round her, and passed her a second time before they had reached their point of separation. In a moment, practical men began to speak lightly of their hitherto favourite paddle-wheel—and the propeller, that they had shrugged their shoulders at, and amused themselves with, for some years of doubtful experiment, rose into altogether unexpected favour." The author then proceeds to give a sketch of the professional career of the inventor, and an account of the invention; it was first suggested to the mind of Ericsson, by noticing the means of propulsion of fishes and birds; he had long considered, with other practical men, that oblique action involved great loss of power, but when he had well reflected that throughout nature the great Mechanic of the Universe had made use of it to give the inhabitants of the air and sea their respective powers of flight, &c., he knew he was in error, and soon convinced himself that no loss of power whatever resulted from oblique action. A model two feet long was the first practical attempt of its application to boat propulsion; this was fitted with a small engine, and placed on the circular basin of a bath in London, and so perfect was his theory borne out in practice, that this little model performed its voyage at the rate of three miles per hour. He afterwards constructed a boat 45 ft. long, 8 ft. beam, 3 ft. draught of water, and fitted with two propellers of 5 ft. diameter each; this experiment was perfectly successful; the moment the steam was turned on, she at once moved at a speed of ten miles an hour, without a single alteration being required in her machinery. So great also were its towing powers, that ships of 140 tons burden were towed at the rate of seven miles an hour; and the American ship *Toronto*, Captain Griswold, was towed into the Thames at more than five miles an hour, to the no small astonishment of the Thames watermen, who, seeing this pigmy vessel tugging her gigantic companion against wind and tide, without any visible agency, nicknamed her the *Flying Devil*. The experiment, though so eminently successful, was regarded by the engineers of London with silent neglect, and the Lords of the Admiralty (who, with other Government bodies, with pain be it written, are too often blind to merit and scientific attainments, whatever their value, unless backed by powerful interest) treated the invention with the most undeserved contempt, although its powers were proved by towing the Admiralty state barge from Somerset-house to Limehouse and back at the rate of ten miles an hour. The only reason of this neglect given, was by Sir William Symonds, who asserted—"That even if the propeller had the power of propelling a vessel, it would be useless in practice, because the power being applied in the stern, it would be absolutely impossible to make the vessel steer;" how erroneous such an assertion is, the recent patents for oblique action propellers, and their practical application fully testify. Not only did not the Admiralty appreciate the invention, but the whole engineering corps of the empire seemed arrayed against it; he was, therefore, obliged to take his invention across the Atlantic, where it [illegible]

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plays the permanent gases, and, in preference to all others, atmospheric air. The heat contained in the air which escapes from the working cylinder is taken up by the air, which enters it at each stroke of the engine; this is accomplished by means of an apparatus called a regenerator, and so perfectly does it operate, that the heat employed in first setting the engine in motion continues to sustain it in full working force, with no renewal more than is requisite to supply the inconsiderable loss by radiation. This invention was brought before the scientific world in London in 1833, and with the prominent and worthy exception of Dr. Ure and Professor Faraday, who well appreciated the discovery, nearly all the leading scientific men of the day condemned the principles as unsound and untenable. After numerous preliminary experiments, he constructed in London an engine of 5-horse power, the performance of which was witnessed by a great number of scientific gentlemen in the metropolis. A number of causes have hitherto delayed the perfection of his plan, one of which was, the high temperature in the circulating medium, soon destroyed the valves, piston, and other working parts; he has, however, persevered, and has now constructed two experimental engines to work at lower temperatures, and is gradually, but surely, approaching the realisation of this important invention. We shall resume the subject in an early Number.

IMPROVEMENTS IN STEAM BOAT PROPULSION.

Notwithstanding the number of inventions (many of which have been patented) for the improvement of the float boards of the paddle-wheels of steam-boats, some of which are of a complex and expensive nature, the majority of steam-boat paddles retain almost the simple form originally introduced upwards of thirty years ago, with, perhaps, some little modification—viz., the rectangular wood float—some now, though still of the same shape, being made of iron. The disadvantages attendant upon this shape have been long known to naval engineers, consisting of a succession of shocks from their impinging on the surface of the water, at an angle injurious to the propulsive power of the engine, causing all that unpleasant vibration more or less experienced on board, and straining the machinery to an unknown degree, as well as the further retardation of power, by their lifting the backwater at the moment their effective force is expended; the only attempt to get rid of these evils hitherto, has been by the certainly ingenious method of reefing (for which, we believe, two or three patents have been had, and expensive lawsuits sustained), that is, by the working of levers and other machinery, making the float enter the water edgeways, avail of its entire propulsive power while beneath, and the moment, when from the rotation of the wheel, that power is expended, cause it also to leave the water in a vertical position. Paddle-wheels on such principles are, however, necessarily complex, expensive in the first instance, and very liable to get out of repair; all these objections have now been removed by an invention of Mr. Smart, shipbuilder, of Bristol, which he has secured by patent; he terms it the elliptical convex metallic paddle-float, and consists of sheet-iron, the outer edge formed into a curved or elliptical shape, with rounded ends, then hammered out into a concave shape, and so placed on the wheels that the central point of the convex side enters the water first, the float thus meeting the retarding fluid gradually, prevents all vibration, and on its leaving the liquid element, its convexity being uppermost, it has no backwater to lift, and offers little retardation to the full power of the engine. This is also not mere theory, their action has been fully tested, the *Shamrock*, a fine vessel running between Bristol and Dublin having increased her speed a full knot per hour, and enabled her to save her tide in a voyage between those two cities. The *Swift*, running between Bristol and Newport, has gained a knot and a half, and the *Osprey*, a vessel of 200-horse power on which the patent was first tried, though imperfect, immediately gained a knot per hour. We may remark it as singular that in 1819 or 1820, the *London Engineer*, then considered a large boat, with 80-horse power engines, making ten knots with common floats, was all at once to do wonders, as she was to be fitted with scoop or concave floats, and gain at least one knot per hour with this "simple contrivance;" but, behold, on the experiment being made, the ten knots dwindled down to seven, and the common float was restored; had they but reversed these floats, and thus anticipated Smart's convex patent of 1844, how many extra millions of miles, with the corresponding benefits would have been travelled over; how many appalling accidents prevented, and valuable lives saved, but it is "better late than never," and we can have little doubt they must become general, from their extreme economy, durability, and safety, and while they add to the comforts and security of all persons travelling by steam-boats, they will save the wear and tear of the machinery and the vessel, and add greatly to the profit of the owner. Their general advantages may be enumerated thus—a considerable increase of effective force, the ease with which the engine will work when labouring in a heavy sea, and the promptitude with which a vessel may be checked under chances of collision, with the absence of sudden shocks, undulation much avoided, the original weight not augmented by absorption, the diameter of the inside and outer paddle-rings may be diminished, thus rendered lighter with the almost entire absence of vibration and great diminution of back-water, and they may be applied with perfect ease to any wheel steamer. We understand the patentee is just concluding with a company for the application to twenty vessels.

THE FAN PROPELLER.

A beautiful little steam boat of 60 tons, called the *Mystery*, has just been launched at Greenwich, propelled by another newly invented means of propulsion from the stern, without the unsightly disfigurement of paddle boxes, and which bids fair to eclipse every other kind of stern propulsion which has yet been patented. This propeller is similar to the fans or sails of a windmill, but with this difference to all other propellers fixed at right angles with the stern, that she has a horizontal movement at the will of the steersman, and thus becomes both propeller and rudder; it will turn horizontally, without affecting its vertical motion to the extent of half a circle—and so beautiful in its action on the vessel, that she [illegible] answers the slightest movement, and can be turned round and round with great rapidity in the water, as if fixed on a pivot. The fan on this principle can be applied to sailing vessels of any size, even to line of battle ships—and its action, being entirely beneath the water, is perfectly free from any accident or damage.

The *Mystery*, although unfinished, started on an experimental trip on Thursday, the [illegible]

[illegible]

New Direct Action Engine.—[illegible]

[illegible]

SMITH'S PROPELLER—THE "RATTLER."

This frigate, which it will be remembered was built on the precise lines of the *Prometheus*, a paddle-wheel steamer, for the purpose of making trials of the various kinds of propellers, made her final trip down the river on Friday week, after numerous experiments, extending over a period of eighteen months. The highest rate of speed which has yet been produced has been by F. T. Smith's Archimedian screw, and which, in fact, may be taken as the greatest known in the history of steam navigation, taking tonnage, small power of engines, and all other circumstances, into account. The *Prometheus*, on her average of twelve trials (that being the standard taken), made 8¾ knots—while the *Rattler* accomplished 9·900 knots, or 11½ statute miles, per hour. Mr. Steinman's propeller reached 9·537, and Mr. Sunderland's 9·280 knots per hour. From these results, the Lords of the Admiralty have decided to send the *Rattler* to sea, equipped with the Archimedian screw, under the directions of Mr. F. T. Smith, and which evidently produces the highest amount of speed, at the least expense of the power of the engine. The choice of the Lords of the Admiralty has been guided, as well by the superior power of this screw, as by its size, being only fifteen inches in length, and only ten feet in diameter. The vessel has already her masts on board; she is rigged with a foremast like a frigate or sloop, and her middle and mizen masts similar to schooner masts; her gun carriages are on board, and she will be rigged for sea with the utmost dispatch. From the success which these fair and most satisfactory trials have given in favour of the screw propeller, it is said that six iron ships of a large class are immediately to be constructed on the same principle. All the trials have been conducted under the superintendence of Mr. Lloyd, chief engineer of Woolwich Dockyard, and Capt. Smith, R.N., of the Royal Dockyard.

A trial, which took place on the Thursday, with the *Wilberforce*, still further establishes the superiority of the *Rattler*. The *Wilberforce* has always been considered the fastest boat on the river, and very recently made the journey from London to Havre in twenty hours; notwithstanding, on the recent trial, in forty minutes the *Rattler* was at least a cable and a half a-head. The following is the proportionate horse-power and tonnage of each vessel—viz.:

	Horse power.	Tonnage.	Tons to each horse-power.
Wilberforce	[illegible]	[illegible]	2·219
Rattler	200	[illegible]	4·257

Or nearly 50 per cent. The Archimedian screw propeller has, therefore, after all the severe trials, and under all circumstances to which she has been subjected, proved its undoubted superiority, and we trust the inventor will reap his merited reward.

CLARIDGE'S SEYSSEL ASPHALTIC MASTIC.*

A little work, containing full instructions for the use of this now highly-approved material for pavements, covering arches, foundations for bridges, gutters, channels, and other building works, has just been published, as announced in our advertising columns, and which should be in the hands of every architect, builder, and artisan, who are likely to be called to have recourse to, or interested in, its use. It enters most fully into the subject, from the preparation of the asphalte from the bituminous limestone of the Jura Mountains to the finish of the various processes in which it is employed. The limestone is first reduced to a fine powder, proportions of sea grit and mineral tar are added, and the whole is then put into large cauldrons, heated by strong fires; the ingredients are kept constantly stirring by powerful machinery for several hours, until the whole has become thoroughly amalgamated, and reduced to a mastic. The mineral tar used must be of the same quality as that which impregnates the limestone, and neither gas or other tar will answer the purpose. It is then run into moulds one foot six inches square, and six inches deep, each weighing from 112 lbs. to 130 lbs., and in this form it is ready for use. The author of these instructions first describes the proper method of laying pavements, and as there is no work, perhaps, requiring greater care to insure durability than the nature of the foundation, and the subsequent processes of the work, he lays them in so lucid a manner before the reader, that none engaged in building can possibly mistake them, including the use of the cauldron, the fuel employed, and how to fuse the mastic; particular instructions are given for laying the groundwork, the concrete, the mastic itself, and making good joints. For cellars, and underground surfaces exposed to the action of water (from whatever cause), as in the neighbourhood of rivers, or sewers, or however affected by damp or moisture, ample instructions are given to secure them from its injurious effects. In covering upright surfaces with the mastic, considerable difficulty is met with, as the material will not adhere to damp, dusty, or dirty surfaces; and as experience, under all circumstances, has given the author a perfect knowledge of every quality of the material, the reader has placed at his immediate command the fruits of that experience, and he fully describes the methods adopted for lining water tanks, fixing skirting moulds, and filling them with asphalte, covering roofs and arches, and various other architectural works. Bricks and tiles, with an asphalted surface, are often found most necessary, and the preparation of these is fully given, with all the failures which are likely to occur, and the means of prevention, manner of repairing damaged work, economy of labour, and weight of materials applied. The work concludes with a description of all the tools employed, and the materials of which they should be made, with a variety of engravings descriptive of them, and the various operations they have to perform. As the Seyssel Asphalte Mastic is now come into such general use, and proved to be of such an important nature, a work of this kind must prove a desideratum, and enable the country workman and the uninitiated, if of common talent and perseverance, to vie in the durability and finish of his work with experienced artisans.

* London: Weale, High Holborn; and Taylor, Wellington-street.

Safety Valves.—Mr. T. Liddle, of Newcastle-upon-Tyne, has obtained [illegible]

[illegible]

Steam Navigation Improvements—The "Problem."—[illegible]

[illegible]